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BEFORE THE POLLUTION CONTROL HEARINGS BOARD
STATE OF WASHINGTON

IN THE MATTER of a Section 401
Water Quality Certification
granted by Department of
Ecology PUD No. 1 of
Jefferson County and City of
Tacoma

PUD NO. 1 OF JEFFERSON COUNTY,
AND CITY OF TACOMA, DEPARTMENT
OF PUBLIC UTILITIES,

Appellants,

v.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Respondent,

and

STATE OF WASHINGTON
DEPARTMENT OF WILDLIFE
DEPARTMENT OF FISHERIES

Intervenors.

PCHB No. 86-118

REVISED FINAL FINDINGS
OF FACT, CONCLUSIONS OF LAW
AND ORDER

This matter is the appeal of base flows contained within a Water
Quality Certification, granted by respondents with respect to a
hydroelectric proposal by appellants.

The matter came before the Pollution Control Hearings Board, Wick
Dufford, Chairman, Lawrence J. Faulk, Member, and Judith A. Bendor,
Member. William A. Harrison, Administrative Appeals Judge presided.

The hearing was conducted at Lacey, Washington, on December 15,
16, 17 and 18, 1988.

Appellants appeared by Mark L. Bubenik, Assistant City Attorney

1 for Tacoma. Respondent, State Department of Ecology appeared by Jay
2 J. Manning, Assistant Attorney General. Respondent Intervenors State
3 Departments of Wildlife and Fisheries appeared by William C. Frymire,
4 Assistant Attorney General. Reporter, Gene Barker and Associates
5 provided court reporting services. Respondent elected a formal
6 hearing pursuant to RCW 43.21B.230.

7 Witnesses were sworn and testified. Exhibits were examined.
8 Closing Briefs were filed on February 4, 1988. From testimony heard
9 and exhibits examined, the Pollution Control Hearings Board issued a
10 decision on June 29, 1988, with a dissent, following. The respondents
11 filed a Petition for Reconsideration. Appellants filed a Memorandum
12 in Opposition. A copy of the transcript was filed. Board Member
13 Harold S. Zimmerman has reviewed the record. After reconsideration,
14 the Board issues this revised decision:

15 FINDINGS OF FACT

16 I

17 This matter concerns the Dosewalips River on the Olympic Peninsula
18 of Washington.

19 II

20 Appellants (hereafter Tacoma) propose to construct a hydroelectric
21 project on the Dosewalips River. The project would consist of a weir
22 which would divert water into a pipeline that parallels the course of
23 the river but initially remains somewhat level as the river descends
24 downstream. At the downstream end of the pipeline, water would fall
25

26 FINAL FINDINGS OF FACT
CONCLUSIONS OF LAW AND ORDER
27 PCHB NO. 86-118

1 through a generator and then be discharged back into the river.

2 III

3 The effect of Tacoma's project would be to reduce the river flow
4 in the segment of the Dosewalips River paralleled by the pipeline. That
5 segment of the river is fairly steep and canyon-like. The natural
6 flows through this "by-pass reach" are vigorous during most of the
7 year. These natural flows are essentially undiminished by
8 appropriation at present.

9 IV

10 Tacoma's hydroelectric proposal must be licensed by the U.S.
11 Federal Energy Regulatory Commission (FERC). Under Section 401 of the
12 Federal Clean Water Act the respondent, Washington State Department of
13 Ecology (DOE) must certify compliance with state water quality
14 requirements. We have previously ruled that such a certification may
15 include base flow limitations in the by-pass reach of the Dosewalips
16 River pursuant to RCW 90.54.020(3)(a) of the State Water Resources
17 Act, of 1971. See "Order Granting Cross Motion for Summary Judgment"
18 entered April 10, 1987.

19 V

20 The base flows for the by-pass reach of the Dosewalips, as
21 contained in DOE's Section 401 Water Quality Certification, were
22 appealed by Tacoma. The notice of appeal was filed before us on July
23 11, 1986. Following pre-hearing motions, the issues remaining for
24

1 hearing were reduced to the following:

2 1. Whether the specific base flows imposed by
3 DOE in this instance are appropriate for the
4 preservation of the fishery resource and related
values?

5 2. What quantity and type of fish inhabit the
6 waters to be affected by the base flows
prescribed by DOE?

7 VI

8 Taking the second issue first, we find that the by-pass reach is
9 inhabited by steelhead and, to a lesser extent, both Coho and Chinook
10 salmon. The quantities of these fish are sufficient to justify base
11 flows tailored to the life cycles of those species.

12 VII

13 As to the first issue, appropriateness of the DOE flow regime, we
14 find as follows.

15 VIII

16 Instream Flow Incremental Methodology. The respondents urged or
17 required that Tacoma conduct a study of the by-pass reach using
18 Instream Flow Incremental methodology (IFIM). This method is
19 generally agreed to be the "state of the art" method for analyzing
20 water flow as related to fish habitat. Under it, a computer modeling
21 study is used to determine "weighted usable area" in a given length of
22 river when flows are varied. The weighted usable area is an indicator
23 of fish habitat and hence fish production.

IX

The respondents regard spawning as the limiting factor in fish production within the by-pass reach. The IFIM data show that when the natural, vigorous flow of river in the by-pass reach is decreased, spawning habitat actually improves. The base flows in this matter were set by selecting, in each month where spawning occurs, that flow ¹ which produces 100% of the weighted usable area using the IFIM data. This constitutes an optimum flow regime for fish where, as here, spawning is the factor limiting further fish production. Moreover, this also constitutes a flow regime which, for fish, is potentially superior to that provided by the natural flow of the Dosewalips River in the by-pass reach.

X

Other factors than those considered in the IFIM study may affect fish production. Some may be flow related such as predation,

¹ The optimum fish flow adopted in this matter was deemed consistent, in testimony from the Department of Wildlife, with the following Department of Wildlife draft policy on instream flow:

Minimum instream flows are flows which maximize habitat for flow-dependent fish and wildlife; minimum flows are not less than optimum flows. Any reduction of flow below minimum instream flow reduces habitat. Additional flow above minimum instream flow does not increase habitat. Natural flows are sometimes less than minimum instream flow, but any prolonging of natural, subminimum instream flow will adversely impact fish and wildlife.

POL IFI, dated June 22, 1984.

FINAL FINDINGS OF FACT
CONCLUSIONS OF LAW AND ORDER

PCHB NO. 86-118

(5)

1 competition, cover and out-migration. Some are not flow related, such
2 as overharvest. These factors were not specifically evaluated in the
3 setting of the base flows at issue. No empirical evidence regarding
4 these factors was considered in setting the base flows.

5 A 1980 study, by Mathews and Olson points out a relationship
6 between stream flow and Coho salmon production in Puget Sound.
7 Initially, studies showed a correlation between annual water runoff
8 from western Washington streams and the commercial catch of Coho in
9 western Washington. This correlation did not last over time,
10 however. Later a similar correlation appeared between summer runoff
11 and the Coho catch. These correlations, changing over time and global
12 in their application to all streams of western Washington, do not
13 materially impair the credibility of the specific IFIM studies
14 conducted in the by-pass reach showing that flow reduction there
15 indicates improved spawning habitat and, therefore, improved fish
16 production potential.

17 XI

18 Tacoma has proposed base flows, using the same IFIM data, that
19 were not accepted by DOE. Tacoma's proposed base flows were selected
20 to equal or exceed the weighted useable area provided by the natural
21 flow of the river for all life cycles of the fish species at issue.
22 The existing, natural flow of the river was deemed by Tacoma to be the
23 "50% exceedence flow" in the IFIM data. This is the median daily flow
24

meaning half the time daily flows are more and half the time daily flows are less. Tacoma's proposed base flows provide weighted usable area equaling or exceeding that provided by the existing natural flow as depicted by the 50% exceedence flow. A summary of pertinent flows is as follows:

<u>MONTH</u>	<u>EXISTING</u> (50% Exceedence flow) (CFS)	<u>DOE</u> <u>BASE FLOW</u> (CFS)	<u>TACOMA'S PROPOSED</u> <u>BASE FLOW</u> (CFS)
Jan.	340	140	100
Feb.	302	100	75
March	325	200	145
April	408	200	130
May	689	200	105
June	738	200	105
July	448	200	90
Aug.	222	200	170
Sept.	159	150	150
Oct.	149	140	140
Nov.	285	140	95
Dec.	397	140	75*

* Initially proposed as 65 CFS this flow was the subject of testimony at hearing during which Tacoma stipulated to the higher flow proposal to protect egg incubation.

1 Although additional data might present a more nearly
2 representative picture, we find that the 50% exceedence flow is an
3 appropriate indicator of the existing flow conditons in the river.
4 Because reduction in flows improves fish habitat to a point where
5 further reductions reverse the trend, the IFIM data shows that
6 existing flow and Tacoma's proposed base flows have similar habitat
7 value while DOE's base flow has habitat value greater than either.
8 Respondents have not made any independent determination of existing
9 fish habitat value in setting the DOE base flow.

10 XII

11 Any Conclusion of Law deemed to be a Finding of Fact is here by
12 adopted as such. From these Findings of Fact, the Board makes these

13 CONCLUSIONS OF LAW

14 I

15 Base flows in perennial rivers of the state are prescribed and
16 authorized by the State Water Resources Act of 1971, Chapter 90.54
17 RCW. In pertinent part, that act provides at RCW 90.54.020 as follows:

18 90.54.020 General declaration of fundamentals for
19 utilization and management of waters of the state

20 Utililization and management of the waters of the
21 state shall be guided by the following general
22 declaration of fundamentals:

23 (1) Uses of water for domestic, stock watering,
24 industrial, commercial, agricultural, irrigation,
25 hydroelectric power production, mining, fish and
wildlife maintenance and enhancement, recreational, and
thermal power production purposes, and preservation of
environmental and aesthetic values, and all other uses
compatible with the enjoyment of the public waters of
the state, are declared to be beneficial.

26 FINAL FINDINGS OF FACT
CONCLUSIONS OF LAW AND ORDER

27 PCHB NO. 86-118

(8)

1 (2) Allocation of waters among potential uses and
2 users shall be based generally on the securing of the
3 maximum net benefits for the people of the state.
4 Maximum net benefits shall constitute total benefits
5 less costs including opportunities lost.

6 (3) The quality of the natural environment shall
7 be protected and, where possible, enhanced as follows:

8 (a) Perennial rivers and streams of the state
9 shall be retained with base flows necessary to provide
10 for preservation of wildlife, fish, scenic, aesthetic
11 and other environmental values, and navigational
12 values. Lakes and ponds shall be retained substantially
13 in their natural condition. Withdrawals of water which
14 would conflict therewith shall be authorized only in
15 those situations where it is clear that overriding
16 considerations of the public interest will be served.

17 (b) Waters of the state shall be of high quality.
18 Regardless of the quality of the waters of the state,
19 all wastes and other materials and substances proposed
20 for entry into said waters shall be provided with all
21 known, available, and reasonable methods of treatment
22 prior to entry. Notwithstanding that standards of
23 quality established for the waters of the state would
24 not be violated, wastes and other materials and
25 substances shall not be allowed to enter such waters
26 which will reduce the existing quality thereof, except
27 in those situations where it is clear that overriding
28 considerations of the public interest will be served.
29 (Emphasis Added.)

30 II

31 Tacoma first urges that base flows may not be set at levels which
32 provide the optimum flow regime for fish. We agree. In Northwest
33 Steelhead and Salmon Council, et.al v. State Department of Ecology,
34 et..al., FCHB 81-148 (1983) we concluded that base flows represent a
35 statutory allocation for the environment to be taken out before the
36 maximum net benefits formula is applied. In that case, however, the

1 base flows adopted by DOE were below the optimum for fish. We
2 concluded that flows in excess of the base flow were subject to the
3 maximum net benefits rule, thereby potentially including flows which
4 would be the optimum for fish. We held that:

5
6 "The maximum net benefits requirement of the WRA
7 [Water Resources Act] does not guarantee the optimum
8 flows for fish, nor guarantee that existing fish
9 habitat will be enhanced. Neither does it guarantee
10 that all flows in excess of instream [base] flows shall
11 be available for diversion. Rather, it calls for the
12 balancing of competing, beneficial uses." Northwest
13 Steelhead, supra, at Conclusion of Law IX, p. 16.
14 [Brackets added.]

15 This balancing of competing, beneficial uses applies only to the
16 marginal flow above the base flow, and not to the base flow itself.
17 Yet if, as here, the optimum flow regime for fish is adopted as the
18 base flow, that optimum fish flow is guaranteed without any portion of
19 it being subjected to the maximum net benefits test. This is not
20 consistent with DOE's earlier adoption of base flow in Northwest
21 Steelhead, supra, nor with our holding therein.

22 Moreover, the adoption of optimum fish flows as base flow leaves
23 barren the statutory admonition that water uses, which by RCW
24 90.54.020(1) includes fish maintenance and enhancement, shall be
25 allocated under the maximum net benefit rule of RCW 90.54.020(2).
26 While, as DOE urges, the maximum net benefit rule applies only to
27 "potential" uses, that limitation would exclude only certain
maintenance flows, such as those adopted by DOE as base flows in

3 FINAL FINDINGS OF FACT
CONCLUSIONS OF LAW AND ORDER

1 Northwest Steelhead, supra. By contrast, the optimum fish flows
2 adopted in this case introduce the potential for enhanced fish use in
3 competition with the potential hydroelectric use, while impermissably
4 dispensing with the statutory maximum net benefits test.

5 The optimum fish flows adopted as base flows by DOE in this matter
6 are inconsistent with RCW 90.54.020(2) in that the incremental portion
7 of these flows constituting fish habitat enhancement were not
8 subjected to a maximum net benefit test.

9 III

10 The optimum fish flows adopted as base flows by DOE are also
11 inconsistent with the statutory authorization for base flows. Base
12 flows, as authorized at RCW 90.54.020(3)(a), are those "necessary to
13 provide for preservation of" fish and related values. The term
14 "preservation" is not specifically defined, nor ambiguous. Words in a
15 statute should be given their ordinary meaning absent ambiguity or
16 statutory definition. Garrison v. State Nursing Board, 87 Wn. 2d 195,
17 550 P. 2d 7 (1976). Dictionaries may be used to ascertain the common
18 meaning of statutory language. Garrison, supra; East v. King County,
19 22 Wn. App. 247, 589 P2d 805 (1987). The term "preservation" means
20 "the act of preserving" while the root word "preserve", means "to keep
21 safe from injury, harm or destruction". Webster's Third New
22 International Dictionary, 1974 (1971). The evidence in this matter is
23 that the optimum fish flows adopted as base flows enhance fish habitat
24 beyond that provided by the river in its natural state. This is
25

1 inconsistent with the statutory plan that base flows "keep safe" or
2 preserve the fish habitat, rather than enhance it.

3 IV

4 Respondent, DOE, urges that it may enhance fish habitat through
5 base flows because of the prefatory wording of RCW 90.54.020(3) which
6 states:

7
8 The quality of the natural environment shall be
9 protected and, where possible, enhanced as follows: . . .
(Emphasis added.)

10 The "preservation" language for base flows then follows at RCW
11 90.54.020(3)(a) as do the requirements for wastes proposed for entry
12 into the water at RCW 90.54.020(3)(b). The prefatory wording provides
13 that the environment shall be "protected" in all cases. The word
14 "protect" means "to cover or shield from that which would injure or
15 destroy or detrimentally affect. Webster's, supra, 1822. Thus the
16 term "protected" is kindred in meaning to the term "preservation"
17 applicable to base flows. By contrast, the word "enhance" means
18 "advance, elevate, augment, heighten or increase". Webster's, supra,
19 753. The key to understanding this prefatory wording is that while it
20 uses the terms "protected" and "enhanced", which are distinguishable
21 from one another, it provides for protection in all cases but provides
22 for enhancement only "where possible".

23 Here it is noteworthy that the Water Resources Act of 1971,
24 Chapter 90.54 RCW, was enacted relatively recently in the history of
25

1 Washington water law. At the time of its' enactment, many rivers and
2 streams had long been subject to appropriations diverting their waters
3 for various uses. Thus while the base flows were intended to
4 "protect" all rivers, some were already over-appropriated to meager
5 flow levels by 1971. In Northwest Steelhead, supra, summer flows in
6 the Green River had been reduced by pre-1971 appropriations to low
7 levels. In that matter, DCE adopted a base flow which exceeded the
8 actual flow in the river at low summer levels. The amount by which
9 base flow exceeds actual flow is sometimes referred to as "paper
10 water" in recognition of the fact that it exists only on paper and not
11 in real life. Yet the worthwhile object of establishing "paper water"
12 is that when in the future, existing appropriators may abandon or
13 forfeit their water rights the associated waters can be devoted to
14 filling out the base flow, and thereby remain in the river. In this
15 fashion the quality of a river already degraded by over-appropriation
16 when the base flow legislation was enacted can be "enhanced" by base
17 flows. This is the situation contemplated by the prefatory language
18 in calling for enhancement "where possible". The matter at hand,
19 however, is not that situation. Rather, the river at issue is flowing
20 in its essentially natural state. Its fish producing potential may be
21 preserved at this natural level through the adoption of base flows.
22 But unlike a river degraded by over-appropriation, this river, in its
23 natural state, may not be subjected to base flows calculated to
24
25

1 enhance its natural productivity. Were that not the case, the phrase
2 "where possible" used in connection with "enhanced" would be deprived
3 of meaning along with the terms "protected" and "preservation". Base
4 flows would then be wrongly understood to be enhancement flows in all
5 instances.

6 We conclude that the base flows at issue enhance the fish
7 producing potential of a river flowing in its essentially natural
8 state, and are therefore inconsistent with RCW 90.54.020(3)(a)
9 limiting base flows to those necessary "to provide for preservation"
10 of fish.

11 V

12 Tacoma has shown that its proposed base flows (see Finding of Fact
13 XI, above) will probably preserve the fish habitat and productivity
14 now provided by the by-pass reach flowing in its natural state. These
15 base flows therefore represent the correct application of RCW
16 90.54.020(3)(a) to the facts of this case.

17 VI

18 Other matters than fish preservation made pertinent to base flows
19 by RCW 90.48.020(3)(a) are not, in this case, sufficient to sustain
20 the base flows adopted by DOE nor sufficient to justify base flows
21 greater than those proposed by Tacoma.

22 VII

23 As we have concluded earlier, base flows are only a first step in
24
25

1 determining the ultimate allocation of water between competing uses.
2 Nothing herein precludes the ultimate allocation of flows greater than
3 the base flow for fish enhancement. If respondents pursue such a
4 course under state law, the maximum net benefits test of RCW
5 90.54.020(2) would apply to flows greater than base flows. If
6 respondents pursue such a course under federal law in FERC
7 proceedings, nothing herein is intended to indicate whether base flows
8 are the maximum flows which ought to be allocated to fish productivity.

9 VIII

10 In reaching our conclusions in this case, we do not render any
11 view as to whether state law should mandate, without consideration of
12 other water uses, 1) enhancement flows to optimize fish productivity
13 or 2) base flows necessary to preserve fish productivity. We hold
14 only that the latter is all the state law now requires - leaving
15 additional allocations for fish to a balancing process. Whether the
16 law should be retained in its present form or changed is a broad
17 question of policy properly addressed to the legislature.

18 IX

19 Any Finding of Fact deemed to be a Conclusion of Law is hereby
20 adopted as such. From these Conclusions of Law, the Board enters this
21

ORDER

The base flows within the water quality certification are hereby vacated. This matter is remanded for reissuance of the water quality certification in accordance with this decision.

DONE at Lacey, WA this 25th day of January, 1989.

POLLUTION CONTROL HEARINGS BOARD

(Wick Dufford)

WICK DUFFORD, Chairman

Harold S. Zimmerman

HAROLD S. ZIMMERMAN, Member

(Dissent)

JUDITH A. BENDOR, Member

William A. Harrison

WILLIAM A. HARRISON

Administrative Law Judge

FINAL FINDINGS OF FACT
CONCLUSIONS OF LAW AND ORDER

PCHE NO. 86-118

(16)

BEFORE THE POLLUTION CONTROL HEARINGS BOARD
STATE OF WASHINGTON

PUD NO. 1 OF JEFFERSON COUNTY
and CITY OF TACOMA,

Appellants,

v.

State of Washington, DEPARTMENT
OF ECOLOGY, DEPARTMENT OF
FISHERIES and DEPARTMENT OF
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Respondents.

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REVISED DISSENTING
OPINION

The Water Quality Certification issued by the Department of Ecology ("DOE") conforms to the requirements of state law to establish base flows and should be AFFIRMED. Therefore, I dissent.

This is a simple case about what constitute adequate minimum monthly flows to preserve fish habitat in the Dosewallips River. The revised majority opinion places an insupportable reliance on a limited mathematical model, derived from only one wateryear, to determine habitat, and ignores a range of critical real-world habitat factors. Moreover, the opinion erroneously concludes that DOE's optimization of flows for one fish species at the spawning life stage constitutes "enhancement" of habitat for all fish. In light of all the evidence, the opinion effectively and improperly shifts the burden from appellants to prove that DOE's base flows are in error, onto respondent DOE to prove their base flows are correct.

In sum, the opinion is fatally flawed.

I

The Dosewallips is a river of unique beauty, with its headwaters flowing from the high glacial peaks of the eastern Olympic Mountains in the Olympic National Park. After flowing through the Park, and national forest and private lands, it empties into deep Hood Canal. The River is an important asset to the State of Washington, supporting wild and pen-reared runs of sea-run steelhead, as well as coho and chinook salmon in the upper portions, and pink and chum salmon in the lower, flatter reaches of the River. Parts of the upper River are steep, with cascades, deep plunge pools and riffles. Upstream, above the proposed project, there is an impassable waterfall preventing fish from migrating beyond. Because of the snow and glacial runoff, the River's flows fluctuate widely from month to month and from year to year.

Because the uppermost origins of the River are within the National Park, the River's water quality is significantly protected. This is a situation increasingly rare among the watersheds and waters of Washington State and specifically Hood Canal. The River is under study for possible inclusion in the Wild and Scenic Rivers List.

II

The proposed hydroelectric project consists of a diversion dam, a penstock (very large pipe), and a powerhouse. At the dam, 50 to 600 cubic feet per second ("cfs") of water from the River would be removed

1 from a 1.2 mile stretch of the River, (between River Miles 13.8 and
2 12.6), in a fairly steep section known as the "bypass reach". The
3 diverted water would flow through the penstock in a tunnel to the
4 powerhouse where electricity would be generated.

5 The project does not include any storage capacity, so flows in
6 excess of 600 cfs, the project's capacity, would not be diverted and
7 would remain in the River and complement any required base flows.
8 Conversely, because of engineering constraints, when the River's flows
9 are less than 50 cfs plus that month's required base flows, no removal
10 of water would occur. However, at flows of 51 cfs plus base flows, all
11 50 cfs could be diverted, resulting in abrupt River flow changes
12 during low flow periods.¹

13 The key disputed issue in this case is: what are the base flows
14 that must be left in the River's bypass reach in order to preserve the
15 fish?

16 III

17 DOE issued the Water Quality Certification allowing PUD No. 1 of
18 Jefferson County and the City of Tacoma to withdraw from 50% to 90% of
19 the River's flows, depending upon the month. By no stretch of the
20 imagination can DOE's action, leaving in the River only 50% to 10% of
21 the flows, be properly characterized as leaving the River in a wild
22

23 1 Additional engineering constraints may limit such diversions, to
24 avoid having to frequently turn the turbines on and off. However, no
25 evidence has been presented further delineating such constraints.

1 state. In rebuttal, appellants propose to remove 95% of the River's
2 flows in all months except September and October. (See Attachment
3 One.)

4 IV

5 To determine what flows are required to satisfy the fish
6 preservation base flow requirements of PCW 90.54.020(3)(a), both the
7 DOE and appellants utilized, to varying degrees, a mathematical model
8 known as PHABSIM (hereafter "model") in an effort to calculate fish
9 habitat. The model is in the early developmental stages. The
10 mathematical results were then interpreted by DOE using experts'
11 professional judgment to derive base flow figures that preserve
12 habitat. This total evaluation process is known as IFIM (hereafter
13 "evaluation"). A basic assumption was made by all parties that
14 preservation of habitat in fact preserved fish. Such assumption does
15 not account for other non-flow related preservation factors, such as
16 overfishing.

17 V

18 A stretch of the River within the bypass was chosen for PHABSIM
19 modeling purposes. Only three physical variables were measured:
20 water velocity, water level, and substrate (composition of the
21 bottom). Only one set of river velocity speeds were measured and used
22 in the model, rather than the customary three. The model then
23 attempted to quantify habitat under different proposed flows,
24
25

1 resulting in a number known as "weighted usable area" ("WUA"). These
2 WUA numbers are intended to be indicators of habitat. Appellants' case
3 consisted of only one witness, who conceded that the Dosewallips is "a
4 very difficult stream" to model.

5 VI

6 The model has not been tested to determine its accuracy range or
7 the magnitude of risk inherent. Moreover, the model cannot even
8 compute habitat when flows exceed 600 cfs, which occurs regularly in
9 the Dosewallips. In addition, for fish fry life stages, the model is
10 very unreliable, attempting to dry-up the River.

11 The model did not include other important flow-related factors
12 which are essential elements of habitat, including: predation,
13 competition and territoriality, sedimentation and the effect on eggs
14 and food supplies, the adequacy of flows to prevent eggs from
15 dehydrating, and the creation of barriers to migration. A properly
16 conducted determination of base flows for fish preservation must
17 consider these other factors, even if the factors have not been
18 individually numerically quantified.² The model's numerical results
19 must be cross-checked with real-life requirements. Unfortunately, the
20 other opinion largely adopts these bare-bones numerical results "whole
21 cloth".

23 2 No party has done a quantitative baseline study for such
24 factors. All parties concede such study would be very expensive, take
25 many years to complete, and is not practical to do. Therefore,
experts' judgments were used.

VII

The Dosewallips River, as it currently flows undammed, provides excellent habitat for steelhead and salmon. The fish have evolutionarily adapted over the millenium to this River with its dynamic changes in flow. The following brief background on fish lifecycles provides a basis for understanding why different flows during the year are critical.

Sea-run steelhead enter the River in winter and early spring, spawning in the River in the spring. The eggs hatch and the fry and juveniles rear in the River for two years, whereupon they migrate downstream to rear in the ocean for about one and a half years before returning to spawn. Adult chinook salmon in the Dosewallips consist of spring and fall runs, with the former entering the River in April to June, staying in the River until they spawn in August-September. Fall run chinook enter in August through September and spawn in December. Their young stay in the River for about one year, before migrating to the ocean. Adult coho salmon enter the River as early as August to spawn, coincident with high flow events such as glacial runoff.

The eggs are laid in gravel in a minimum of six inches of water. With as little as 15 minutes exposure to air, eggs dry-out and de-water. This dehydration causes significant egg mortality.

VIII

The type of habitat suitable for steelhead and salmon differs depending upon the particular life stage. Under natural conditions several life stages of fish exist in the River at the same time.

When issuing a Water Quality Certificate which allows diversion of a river's flow, given the variety of concurrent habitat demands, an expert determination has to be made as to which life stage is most flow-sensitive. That life stage is then "optimized" using the WUA habitat indicators.

All parties engaged in "optimization". DOE correctly used the spawning stages for such optimization.³ In contrast, where choices had to be made, appellants optimized for juvenile rearing.

IX

Appellants used a statistical river flow at the "50% Exceedance" level based on only one water-year, (1931-32), to derive the weighted usable area habitat indicators. Appellants erroneously concluded that such habitat indicators alone constitute "existing habitat" for purposes of base flow determination. The other opinion erroneously adopts appellants' methodology.

³ In February, when there is no spawning stage, DOE used the juvenile rearing stage.

The 50% Exceedance ("50% E") flow is a statistical figure which the Federal Energy Regulatory Commission requires be used for hydroelectric permit applications. 50% E is also a calculation in harmony with engineering/design criteria. However, there is little credible testimony in this proceeding that the 50% E flow levels are in fact grounded in the biological habitat requirements of fish.

In addition, appellants' 50% E levels were based on 1931-32 median flow figures, that is: half the time in a given month in 1931-32 the flows exceeded that statistical level, and half the time they were less. In the real world, there can be a vast difference in flow levels between 50% E median flows and average (mean) flows, e.g., in one month 210 cfs was the median, whereas 800 cfs was the mean. In this project, appellants' base flows will reduce in-stream flows to the 95% E level; 95% of the time the in-stream flows remaining in the bypass would be less than the 1931-32 median flows.

X

The Washington Department of Ecology, three resource agencies -- Washington State Departments of Game and of Fisheries, and the U.S. Fish and Wildlife Service -- and the Indian Point No Point Treaty Council, all determined that the model-derived 50% E median flows based solely on one water-year did not sufficiently measure real-life existing habitat in the dynamic Cousewallips River. There was abundant evidence of the incorrectness of appellants' choice of solely 1931-32, one year for modeling, and their use of median figures. The other

REVISD DISSNTING OPINION
PNDOP

1 opinion's cryptic approval (at Finding of Fact XI) essentially ignores
2 the evidence.

3 XI

4 During the evaluation stage, in addition to optimizing for the fry
5 life stage, DOE and the other resource agencies evaluated other
6 habitat factors in deriving the base flows.

7 At all life stages fish are subject to predation. When confined
8 to less water due to lower flows, i.e., both less area and less depth,
9 predation is likely to be enhanced and fish losses increased. Lower
10 flows also provide less protection by decreasing the cover provided by
11 bubbles, making the fish more visible.

12 With the decrease in flows, the fish are confined to smaller areas
13 when competing for spawning territory and for food. The abundance of
14 a variety of food prey, including insects, is related to flow. In
15 addition, as stream temperatures increase during the year, fish
16 metabolism increases, as does food consumption, thereby heightening
17 territorial conflicts resulting from lower flows.

18 With less flow and water velocity, water-borne sediments are
19 deposited onto the substrate at higher rates, increasing the risk of
20 smothering eggs and harming prey organisms. The greatest significant
21 increase in sediment deposit occurs during intermediate flows.

22 At the present time, prior to diversion, there are no known
23 barriers to fish upstream migration below or through the Dosewallips
24 bypass reach. Decreased flows have the likely potential to create
25

26 REVISED DISSENTING OPINION
27 BENDCR

PCHE No. 86-118

1 barriers by not providing sufficient water for fish to leap upstream.

2 Appellants' base flows rely solely on the model, and did not
3 account for these significant habitat factors.

4 X

5 The Department of Ecology correctly exercised their responsibility
6 to evaluate the model numbers, determined which life stage is most
7 flow-dependent, and further evaluated real-world habitat factors in
8 determining base flows. The Department did so in conjunction with
9 numerous experts from several resource agencies, both state and
10 federal. Appellants' sole witness did not prove that the Department
11 of Ecology's base flows do more than preserve potential habitat. To
12 the contrary, their sole witness testified that he could not conclude
13 that the DOE base flows would enhance fish production.

14 Appellants have clearly not sustained their legal burden.

15 XI

16 The Water Quality Certification provides for base flows to
17 preserve fish production potential in conformance with RCW
18 90.54.020(3)(a). Therefore, no maximum net benefits test need have
19 been performed. Appellants have failed to prove that these are
20 enhancement flows.

21 The Department of Ecology's base flows should be AFFIRMED.

22 DONE this 25th day of January, 1989.

23
24 
25 JUDITH A. BENDOR, Member

26 Attachment One
27 REVISED DISSENTING OPINION
BENDOR
PCHE No. 86-118

(10)

1	<u>MONTH</u>	<u>EXISTING</u>	<u>DOE</u>	<u>TACOMA'S PROPOSED</u>
2		(50% Exceedence	<u>BASE FLOW</u>	<u>BASE FLOW</u>
3		flow)		
4		(CFS)	(CFS)	(CFS)
5	Jan.	340	140	100
6	Feb.	302	100	75
7	March	325	200	145
8	April	408	200	130
9	May	689	200	105
10	June	738	200	105
11	July	448	200	90
12	Aug.	222	200	170
14	Sept.	159	150	150
15	Oct.	149	140	140
16	Nov.	285	140	95
17	Dec.	397	140	75*

18
 19
 20
 21 * Initially proposed as 65 CFS this flow was the subject of
 22 testimony at the hearing during which Tacoma stipulated to the higher
 flow proposal to protect egg incubation.

23
 24 Attachment One

25
 26 REVISED DISSENTING OPINION
 27 BENDOR
 PCHB No. 86-118